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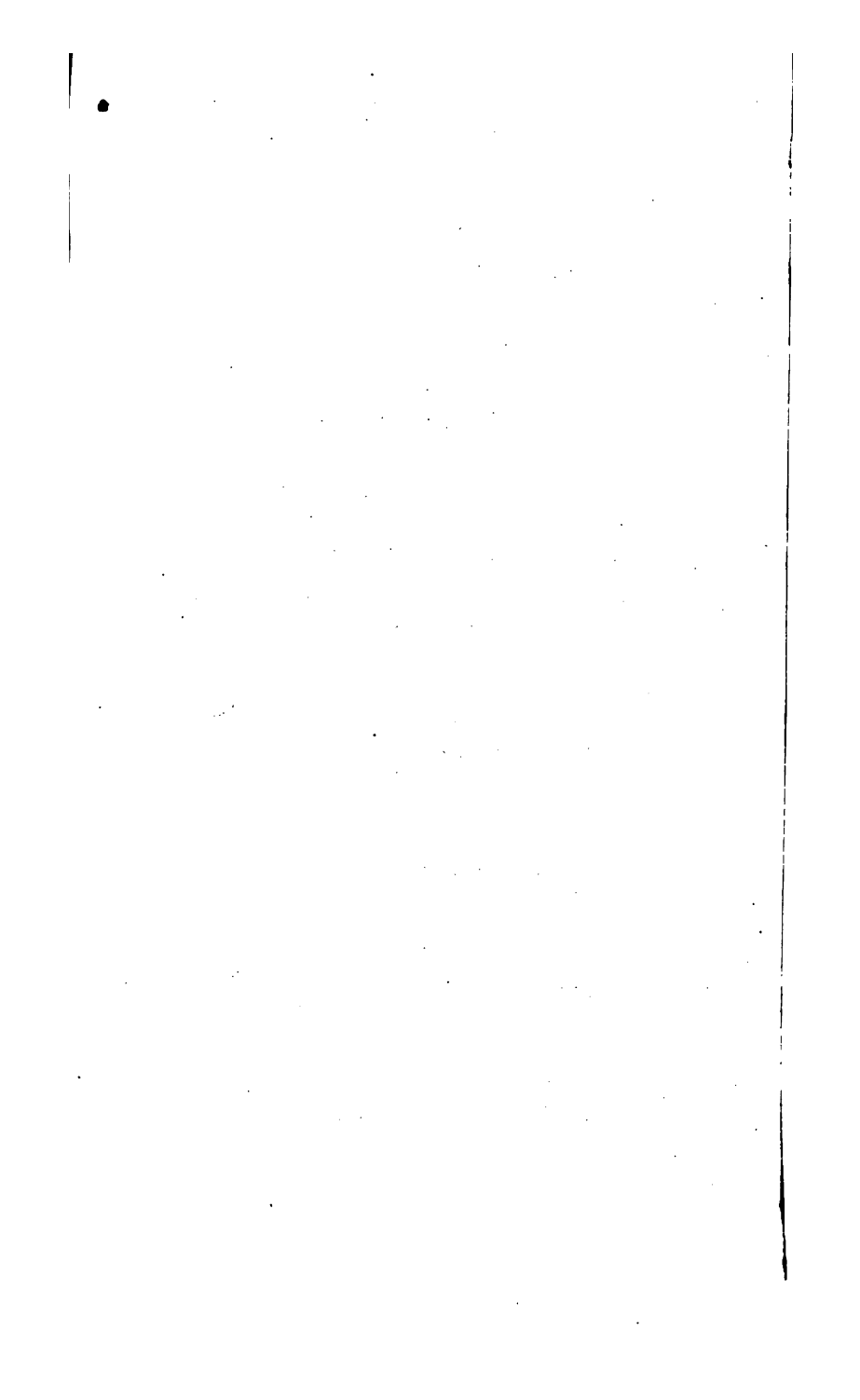
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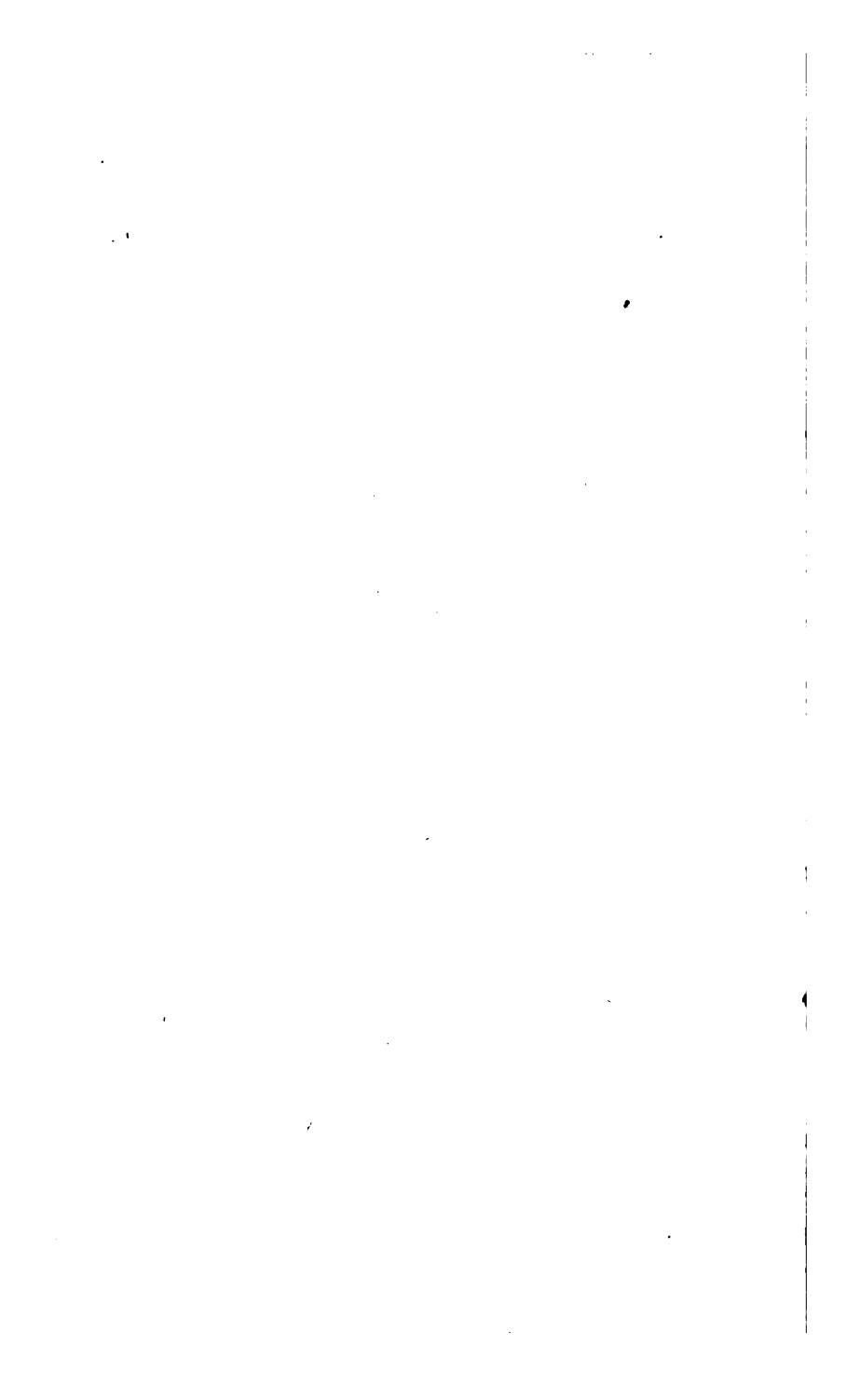
INSTRUCTION
OF
MUSKETRY.



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Circular Memorandum.

Horse Guards, 23rd February, 1854.

THE General Commanding-in-Chief deeming it essential that one uniform system of instructing the troops in the use of the Rifled Musket should prevail throughout the Army, and having decided that a book of Instructions should be drawn up for that purpose, founded on the system which it is intended to pursue at the School of Musketry at Hythe,—His Lordship has directed that three copies shall be transmitted to the several Regiments and Depôts, viz. :—

- 1—for the use of the Commanding Officer,
- 1—for the Officer Instructor,—and
- 1—for the Non-Commissioned Officer Instructor;

and Viscount Hardinge requests that General Officers Commanding Districts will make a point of ascertaining, at their periodical Inspections, that the Instructions, as therein laid down, are strictly observed by the troops under their orders.

By Command,

G. A. WETHERALL,
Deputy Adjutant-General.



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INSTRUCTION OF MUSKETRY.

PART FIRST.

Duties of the Instructors of Musketry in Battalions.

The Officer Instructor of Musketry.

IN every battalion the instruction in firing, placed like all other exercises under the responsibility of the commanding officer, will be especially confided to the direction of a captain or lieutenant, who will exercise the functions of officer instructor of musketry. This officer, having passed the specified time at the School of Musketry, will be charged with the practical and theoretical instruction of the young officers and recruits, and with the theoretical and preliminary instruction of the other officers and soldiers of the battalion. The *target practice* of the soldiers in the companies will take place (*when practising by companies*) under the command of their captains. The officer instructor, however, will be present in his capacity as instructor, to assist the captains by his superior knowledge in this particular branch of the service, and in order that the instruction and practice may be conducted with uniformity throughout the battalion.

The commanding officer will assemble the officers of the battalion once every quarter, when the officer instructor will explain

to them the theoretical principles of musketry. The officer instructor will also assemble the non-commissioned officers and men by squads, or companies, every two months, for the same purpose. On these occasions the instructor, after having thoroughly explained the principles contained in this book, will be at liberty to advance deeper into the subject, developing, to a degree proportioned to the rank and intelligence of his auditors, the whole history of small arms, from the first invention of gunpowder, and the successive steps by which the rifled musket has attained its present efficiency, in order that the officers and soldiers, by acquiring a thorough knowledge of the subject theoretically, may take greater interest in the practical part of this most important branch of their duty.

Every young officer, on joining his regiment, previous to his being dismissed drill, will be placed under the instruction of the officer instructor, and will attend the practice of the recruits, and of the other soldiers, until dismissed by him. The instruction of the *recruits* in firing (practical and theoretical) will be placed entirely under the superintendence of the officer instructor, as well as the *target drill*, and *judging distance drill* of the soldiers in the companies. It is not, however, intended to prevent the attendance of captains and officers with their companies, the instructor acting on those occasions in the capacity of adjutant, to insure uniformity, and close adherence to the system laid down, for which the instructor is held responsible.

The officer instructor will arrange the progression of the different companies, from one branch of the instruction to another; he will cause the ground to be properly prepared for practice, and butts to be erected according to rule. At every practice there will be a fatigue party on the ground, for the management of the targets, under the orders of the officer instructor. The officer instructor and his subordinates will inspect all the practice registers, diagrams, and returns, and see that they are according to form. He will also make out the battalion returns, and send them to the commanding officer. The officer instructor will recommend to the commanding officer those non-commissioned officers whom he may consider best qualified for promo-

tion to the ranks of non-commissioned officer instructor of the battalion, or of the non-commissioned officer instructor in the companies. He will award (subject to the approval of the commanding officer) the battalion and company prizes for target practice and judging distance practice.

The officer instructor will be exempt from all regimental duty, and from all such garrison duty as may clash with his duties as an instructor of musketry.

Assistant Officer Instructor.

In each battalion a subaltern will be chosen to act as assistant instructor. This officer will only be exempted from such garrison and regimental duties as may interfere with his duties as assistant instructor during the periods of target practice. He will take the place of the officer instructor, should it be necessary, during his temporary absence.

The Non-commissioned Officer Instructor of Musketry.

The non-commissioned officer selected for promotion to this rank will be sent to the school of musketry, and when he has remained there the specified time, and qualified himself for the post, he will be appointed non-commissioned officer instructor of the battalion. He will be placed under the special orders of the officer instructor, and will rank next to the serjeant-major and quartermaster-serjeant (in the Guards with the drill-serjeants, according to seniority). He will assist the officer instructor in all his duties, and will be especially charged with the practical part of the instruction. He will attend every target practice and target drill. He will take charge of the targets, measuring tapes, cords, flags, &c., so long as they remain in use, and until they are delivered over to the quartermaster's department. He will superintend the company instructors in the performance of their duties. He will precede the companies to the practice ground with the fatigue party, and will superintend the placing

of the targets according to the orders received from the officer instructor. He will measure the distances himself, and is responsible that they are correctly marked. At the conclusion of each target practice he will, if necessary, mark off the hits on the diagram provided for that purpose. If a diagram has been kept by the serjeant who has been marking in the butt, the non-commissioned officer instructor will compare it with the register, and ascertain the correctness of both. He will receive, at the conclusion of each practice, the duplicate column of "total points;" these he will make use of to check the registers and companies' returns, which, if found correct, he will take to the officer instructor, who, after carefully inspecting them, will countersign them, and make out the battalion return from them. Like the officer instructor, he will be exempt from all garrison and regimental duty.

The Company Instructor.

In each company the senior serjeant will be charged with the instruction of the men of his company in target practice, judging distance, and cleaning arms, under the orders of his captain, and of the officer and non-commissioned officer instructor of the battalion. He will keep the register of his company on the practice ground. At the conclusion of each practice he will read over to the company the number of points obtained by each man; he will then go up to the target, and compare his register with the diagram in the marker's butt, should one have been kept; both register and diagram will then be signed by two serjeants, viz., the company instructor and the serjeant of another company who has kept the diagram; the company instructor will then take them to the officer instructor, who will countersign them. The duplicate *total points*, after receiving the initials of the officer instructor, will be immediately torn off, and handed over to the non-commissioned officer instructor of the battalion. The same form will be attended to in the practice of judging distance. He will attend with his company when it is ordered for target drill or judging distance drill, and assist the officer and

non-commissioned officer instructors in the performance of their duties. The exercise of his functions as company instructor does not require that he should be taken off the duty roster.

Summary of Instruction.

The instruction of musketry is divided into two principal parts, the *theoretical* and the *practical*.

The theoretical branch is confided especially to the officer instructor, who will explain the principles thereof, as mentioned under the head of "Duties of the Officer Instructor." In this instruction the soldier will be made to understand the reasons for all those rules which have to be attended to in practice.

The practical branch is divided into two principal parts: *drill* and *practice*. In the former are comprised the *cleaning arms*, *target drill*, *judging distance drill*, and the *manufacture of cartridges*; the latter is divided into *target practice* and *judging distance practice*.

Cleaning of Arms.—In this branch the soldier will be made to learn the names of the different parts of the firelock, the rules for *cleaning* and *keeping them in proper repair*. This will be the first exercise in which the soldier is practised. The instruction in this branch will be given to the recruit by the non-commissioned officer instructor of the battalion, and to the soldiers in the companies by the instructor of the company.

Target Drill.—In this drill the soldier will be put through all the motions of firing ball: it will be divided into *aiming* and *position drill*; in the first, the soldier will acquire a knowledge of the use of the sights, and his progress in this branch will be tested by making him aim with them at different distances, by means of the traversing rest; in the second, the soldier will be put through all the motions of firing, standing, and kneeling, with the same accuracy as if actually firing ball, attention being paid to each movement: this exercise is in order to habituate the soldier to the correct position, and to the natural connection that should exist between the hand and the eye, and is intended

to make up in some measure for the small amount of target practice of which the yearly allowance of ball ammunition admits.

Judging Distance Drill.—In this drill the soldiers will be accustomed to take note of the size of men and objects at different distances; and after judging the distance of a man placed at any uncertain distance from them, they will be made to pace and measure it.

The Manufacture of Cartridges.—In each company from ten to a dozen men will be instructed in the manufacture of cartridges by the non-commissioned officer instructor of the company.

Target Practice.—Target practice is the *proof* of the attention that has been paid to the preliminary drills. The instruction in this branch is given to the *recruits* by the officer and non-commissioned officer instructors; and to the *soldiers in the companies* by the captains and by the company instructor, with the assistance of the officer instructor of the battalion. This practice is divided into three parts: namely, firing singly, file firing, and firing in extended order,—the latter of which is again sub-divided into two parts; namely, firing at *known* distances, and firing at *unknown* distances, in which *latter* the practice of judging distance is combined with that of target practice.

Judging Distance Practice.—This practice will be carried on, when possible, by the sections that are not occupied in firing, when at target practice. It has for its object to *test* the proficiency of each company in judging distance. The answers of each man will be noted down, and the result will be taken into consideration in awarding the prizes at the end of the year.

All the above branches of instruction are detailed in the remainder of this pamphlet; they will each be gone through yearly by every soldier of the battalion; and the number of drills or parades to be devoted to each branch, with the amount of ammunition to be expended at each drill or parade, is given in a table at the end (page 52). The time to be spent by the recruits in these exercises, before they are dismissed drill, must depend on the intelligence of the individual, and the progress made, according to the discretion of the officer instructor; but the

amount of *ammunition* to be expended in the instruction of the recruits is not under ordinary circumstances, to exceed the amount specified under the column for recruits, in the table before alluded to.

To the above course of instruction may be added that of *skirmishing*, when the nature of the ground admits of it. A squad of from 15 to 20 men will be extended in skirmishing order on broken ground, and made to advance and retire firing, judging their distance, and setting the sights according to the position of a supposed enemy, or of another squad in front of them; the squad will occasionally be halted, when the instructor will go down the ranks, and examine and, if necessary, correct the position of each soldier, pointing out errors either in the appreciation of distances, or in the method of covering himself from the fire of the enemy, by taking advantage of the irregularity of the ground; he will also require each man to point out to him the position he intends to occupy when next ordered to move, either in advancing or retiring.

After the above course of instruction has been gone through, the men should, if there is any extra ammunition, be trained to use their muskets at short distances (from 50 to 300 or 400 yards), with the sights down, judging for themselves the proper elevation or depression to be given to their muskets.

PART SECOND.

Theoretical Principles.

THE barrel of the firelock is a cylinder of equal dimensions throughout in the inside or *bore*; but as it is necessary to construct the metal thicker at the breech than at the muzzle, the barrel *externally* is larger at the breech than at the muzzle; consequently, the upper surface of the barrel does not lie in the same direction as the bore, but forms an angle with it.

Fig. 1.

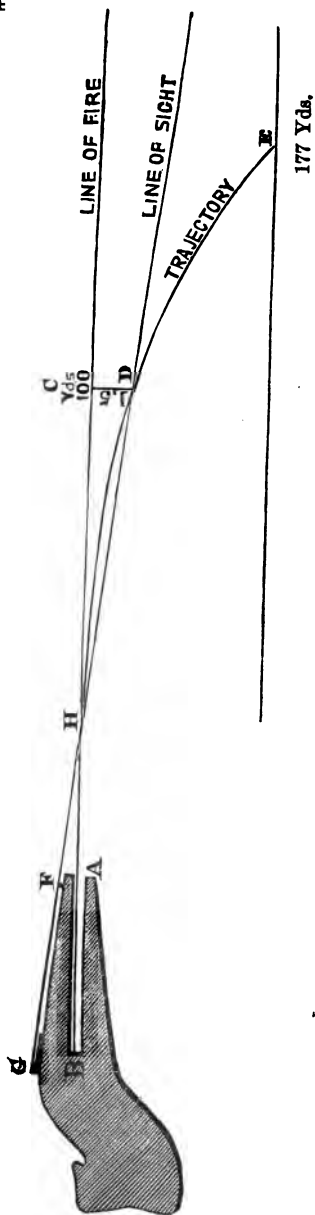
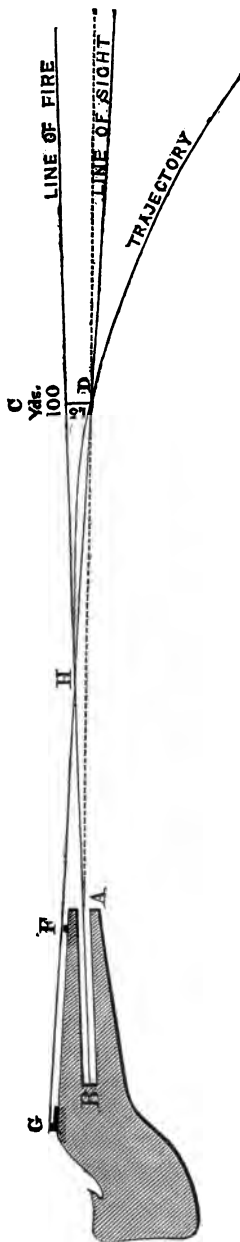


Fig. 2.



The *axis* of the piece (A. B., figs. 1 and 2) is an imaginary line drawn through the centre of *bore*, and parallel to its sides.

The continuation of the *axis* in the same line (A. C., figs. 1 and 2) is called the *line of fire*, so called because it marks the direction that is given to the bullet when it first quits the muzzle.

The *line of sight* (G. F. D., figs. 1 and 2) is the line taken along the sights, on the upper surface of the barrel; it is formed by the continuation of the line between the centre of the notch on the back sight, and the top of the foresight: this line crosses the *line of fire* beyond the muzzle of the gun at (H., fig. 1).

Every bullet, when fired from a musket, has a natural tendency to fall to the ground; this tendency *increases* as the bullet nears the earth; on the other hand, the velocity of the bullet in its forward motion *diminishes* as it becomes more distant from the muzzle; the effect of these two distinct motions, the one increasing as the other diminishes, by reason of the resistance offered to the course of the bullet by the atmosphere, is to cause it to move in a curved line (A. D. E., fig. 1), called the *trajectory*; for a short distance this line is scarcely distinguishable from the *line of fire*: it crosses the line of sight at a short distance from the muzzle, rising above it gradually; as the velocity of the bullet diminishes, it falls off more and more from the *line of fire*, proceeding in a curved direction to D., where it again crosses the line of sight, passing below it, and finally it touches the ground at E.

In order to appreciate the degree of curve, or *drop*, that takes place, suppose the *axis* of the piece (A. B., fig. 1) to be laid perfectly level, at a distance of $4\frac{1}{2}$ feet from the ground, the *line of fire* will then be horizontal, and the *line of sight* forming an angle with it, inclining towards the ground; now, if the musket be fired in this position, the bullet commencing its fall as soon as it quits the muzzle, and proceeding in the curved trajectory above described, will be found, at the distance of 100 yards from the muzzle of the gun, to have fallen 1 foot 5 inches (say 1 foot and a half) (C. D., fig. 1), and at the distance of 177 yards it will touch the ground.

It is evident, therefore, that if the *axis* of the piece is directed

so that the *line of fire* passes through the mark fired at, the bullet will never hit it, but will always pass below it; now it is sufficiently near the truth to say that the line of fire must be directed as much *above* an object at a given distance as the bullet passes *below* the line of fire at that distance; and since it has been shewn that at 100 yards this drop is one foot and a half, the height of the back sight of the firelock has been arranged so that when the aim is taken at an object at 100 yards, (*with flap down*) the axis of the piece is directed a foot and a half above the object.

To hit an object at 100 yards, it is necessary therefore to aim *straight at it* with the lowest fixed sight.

From what has been said above, it is obvious that if the same sight be used to aim at an object at any greater distance than that for which the sight is intended, the bullet will not hit it, but will pass below it. The back sight has, therefore, been made capable of adjustment, so that by raising it you obtain a higher point for each successive distance; by this arrangement the soldier is enabled to aim straight at an object at every distance, provided always that the sight is properly adjusted, according to the rules hereinafter laid down.

It is necessary that the lines of *fire* and of *sight* should be contained in the same vertical plane, in which case the *trajectory* will also be described in the same plane. This is effected by holding the sight perfectly upright; for if this is not attended to, not only will the elevation be affected by it, but the musket will throw to the right or left, according as the sights are inclined to the right or left.

It has been shewn that the trajectory crosses the line of sight twice—first near the muzzle, rising above it; and again, it should cross it at the object fired at. The distance of this second intersection from the muzzle depends upon the angle formed by the line of sight and the line of fire,—in other words, upon the elevation given to the axis; but it is *also affected* by the *direction* in which the line of sight is taken. If the line of sight is directed upwards at any considerable angle, then the force of gravity (or force caused by the weight of the bullet), being more directly *opposed* to the course of the trajectory, produces a greater effect

upon it, checking the velocity, and causing it to cross the line of sight in its downward course *nearer* to the muzzle than when the line of sight is directed horizontally. In like manner, when the line of sight is directed downwards at a considerable angle, the force of gravity acting to a certain extent in the same *direction* as the course given to the trajectory, *increases* the velocity, and causes the bullet to cross the line of sight at a *greater* distance from the muzzle than when the line of sight is directed horizontally.

The practical rules deduced from this principle are the following :—When firing *upwards*, aim *higher* than when firing at an object on the same level ; and when firing downwards, aim low. The ordinary undulations of the ground, however, do not afford sufficient difference of level to make it necessary that this rule should always be attended to in practice : it would, nevertheless, affect the practice when firing at such angles as 45 degrees,—in firing up or down a precipice, for instance.

The course of the trajectory is also greatly affected by wind. When the wind blows across the range from the right, the bullet is forced to the left, and *vice versa*. When the wind is from the rear, the velocity of the bullet is accelerated, thereby causing it to cross the line of sight at a greater distance from the muzzle of the gun than when the atmosphere is calm. In like manner, when the wind is from the front, the velocity of the bullet is diminished, causing the bullet to hit the object low. In making allowance for wind, therefore, the following rules must be attended to :—When the wind is from the right, aim a little to the right ; when from the left, aim to the left ; when from the rear, aim low ; when from the front, aim high ;—remembering, however, that the bullet is less affected by a wind from front or rear, than by a side wind.

As no fixed rules can be laid down for firing in different states of atmosphere, the soldier must be guided entirely by his own experience ; and too much attention cannot be paid to these, and all other causes which are calculated to affect the accuracy of fire.

PART THIRD.

Practical Instruction in Firing.

Target Drill.

Aiming with a Rest.

FOR this exercise the traversing rest must be used to support the firelock; or, in the absence of a traversing rest, three stakes tied near the top, and supporting a bag of sand about $4\frac{1}{2}$ feet from the ground, will answer the same purpose. The squad, which should not exceed five or six men at a time for each stand, may parade in side arms, each man having his own firelock. An ordinary target should be set up at the distance of 100 yards for the men to aim at: placing the men in single rank, a few paces in rear of the stand, the instructor will make each soldier advance with his firelock, and placing it on the rest so that the sights are perfectly upright, he will aim at the target, according to the rules laid down in the instructions for aiming, at the distance of 100 yards. The man will then remove himself, in order that the instructor may look along the line of sight, and if he observes any error, he will cause the next man to advance, and point out the defect; the error, however, is always to be corrected by the man who has aimed. When each man of the squad has been exercised at this distance, the squad will be practised at 150 yards; and so on, at every 50 yards up to 900. To vary the practice, however, the squad should occasionally be exercised at intermediate distances (as 425 yards, for example). In order to habituate the men to an object of the same size as that at which they will have to fire at in practice, a double tar-

get will be put up at 250 yards, and, in like manner, one target will be added at each distance, conformable to the rules laid down in the "*target practice*." The squad will also occasionally be made to aim at a soldier placed in front of the target, or at a group of several men together: the instructor will take care that in this practice every man closes his left eye, aiming with the right eye only; and if any of them are not able to do so at first, they will soon succeed by tying a handkerchief over the left eye. The instructor will caution the men that they are to *fix* the eye on the mark in aiming, and not on the fore sight of the musket. The instructor will also explain the difference between *fine sight* and *full sight* in aiming;—the former being, when the line of sight is taken along the bottom of the notch of the back sight, the fine point of the fore sight only being seen above it in the alignment, as A;—the latter, is when the point of the fore sight is taken in alignment with the shoulder of the notch of the back-sight as B.

As these two methods of aiming cause a slight difference in the angle of elevation, it is necessary to understand that the ordinary rules for aiming are intended to apply to *half sight*; that is, when the alignment is taken with the summit of the fore sight at half distance between the shoulder and bottom of the back sight. As some firelocks will carry higher and others lower than the average, allowance can be made for this defect by aiming with full sight when the musket is found to carry low, and by aiming with fine sight when it carries high; when, however, no such defect has been observed in the practice with the firelock, the men are invariably to be taught to aim at half sight, as C.

Fig. 3.

A



Fig. 4.

B



Fig. 5.

C



*Instructions for aiming with the Rifle Musket.***Firing at a Human Figure.**

- At 100 yards. Aim at the waist.
- At 150 yards. Raise the sliding bar, raise the sight, and aim with the 200 yards, point at the thigh.
- At 200 yards. Aim at the waist with the 200 yards point.
- At 250 yards. Press down the sliding bar, aim with the 300 yards point at the knees.
- At 300 yards. Aim with the 300 yards point at the waist.
- At 350 yards. Raise the sliding bar to half distance between the 300 and 400 yards point, and aim at the waist.

Firing at the Target.

- Aim with the sight down, straight at the bull's eye.
- Raise the sliding bar, raise the sight, aim with the 200 yards point at the bottom of the black ring.
- Aim at the bull's eye with the 200 yards point.
- Press down the sliding bar, aim with the 300 yards point, six inches below the black ring.
- Aim with the 300 yards point at the bull's eye.
- Raise the sliding bar to half distance between the 300 and 400 yards point, and aim at the bull's eye.
- From 400 to 800 yards. Make use of the sliding bar, by raising it to the respective distances, as marked on the back sight.

Position Drill.

For this drill the squad will fall in with their knapsacks on, in single rank, at one pace apart, and at any convenient distance from the target or mark. The instructor will then order the squad to fix bayonets, and will put the whole squad through the position drill, first in slow time standing, according to the following rules :—

- | | |
|---------------|--|
| 1st. Load. | According to regulation. |
| 2nd. Ready. | According to regulation, and adjust the sight. |
| 3rd. Present. | 1st. Bring the firelock at once to the shoulder, |

pressing the centre part of the heel-plate firmly into the hollow of it, with the left hand, which must grasp the piece at the swell, the right hand holding it at the small, the right elbow slightly raised (but not so much as to impede the aim of the rear rank man), the muzzle inclining to the bottom of the object and the forefinger of the right hand extended along the side of the trigger guard; at the same time shut the left eye.

4th. 2nd. Raise the muzzle slowly and independently until the foresight is aligned through the back sight with the object the right eye is fixed upon; at the same time placing the forefinger on the trigger, and restrain the breathing.

5th. 3rd. Pull the trigger with the second joint of the finger by a steady pressure, without the least jerk or motion of the hand or elbow, keeping the eye still fixed on the object.

6th. 4th. Bring the firelock down to the capping position, at the same time bring the right foot to the position in which it was placed before coming to be ready; shut down the flap, count a pause of the slow time, and come to the position of "prepare to load."

7th. Load. According to regulation.

Having thus put the whole squad through the drill in slow time, and corrected the position of each man, the instructor will order them to continue the motions of loading and firing, independently aiming at the mark; and moving to the rear of the squad, he will see that each man attends to the instructions given him, and especially that the firelock is pressed firmly to the shoulder: the instructor will then place himself in front of each man, at five or six paces distant, and will desire him to aim at his right eye, in order that, by closing his left eye, he may see along the sights so as to correct the aiming.

When the men have been sufficiently exercised in the position of firing standing, they will be put through the drill in the

kneeling position, going through it at first, in slow time, according to regulation.

Judging Distance Drill.

Detailed Instruction for the Recruits and other Soldiers in the Companies.

In order to apply the rules of firing laid down for the musket, it is necessary to know the distance which separates a man from the object he is firing at.

In firing for instruction, the target is generally placed at known and measured distances, but before the enemy the distance is unknown; it is necessary, therefore, to judge the distance quickly and exactly, in order to regulate the elevation of the piece accordingly.

In order to teach the soldier to estimate distances by the eye, he will be instructed according to the following rules in the first instance, before he passes on to the method contained in the Judging Distance *Practice*.

The instructor will cause a line of 300 yards to be measured accurately; this line will be divided into equal parts of 50 yards each, by perpendicular lines of the length shown in the diagram (fig. 6).

At the extremity of each of these perpendicular lines the instructor will place a soldier standing at ease, and facing the squad he is about to instruct. It will be observed, that each of these soldiers are placed at a greater distance from the line of 300 yards, in proportion as they are distant from the point where the squad will commence their instruction, in order that each soldier may serve in turn as a point of distance for the squad to estimate.

The instructor will point out successively to the men the different parts of the arms, accoutrements, figure, and dress, which they can still perceive distinctly on the soldier, placed at 50 yards distant, and also those parts they can no longer perceive

clearly at this distance; he will question the men one after the other on the observations they make on what they see, but he must not expect that the answers should be the same from every man, since the eyesight is not the same in all.

Every soldier will try to impress upon his mind the appearance of the man placed at 50 yards.

The instructor then, by moving the squad to the right, will place them in front of the soldier at 100 yards distant, and will cause them to make observations of the same kind as on the man at 50 yards, and he will desire them to make comparisons between the two men placed at these two different distances.

The instructor will then pass on to the other distances, proceeding in the same manner as for the first two.

He will endeavour above all to point out to each soldier, according to the observations he may make, the differences that exist between the six different distances comprised in the subdivisions of 300 yards, pointing out at each distance what parts of the figure, dress, and equipments are clearly perceivable, those that are seen confusedly, and those which are no longer visible.

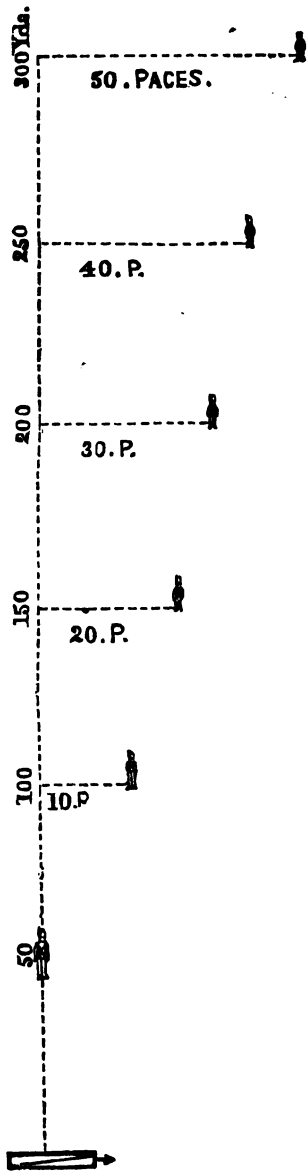
The instructor will make the men observe the state of the atmosphere at the time, remembering that objects are not so distinctly seen on a dull day.

The men who are placed as points will then be relieved, for which purpose the squad should be of sufficient strength; double the number of the men employed as points, being the most convenient strength, for the squad to be exercised at one time.

When all the men of the squad shall have made a sufficient number of observations on the different points designated, and when these observations are well engraved in their memory, the instructor will proceed in the following manner to the estimation of distances comprised within the limits of 300 yards.

After having marched the squad on to different ground from that on which the appreciation of distances has taken place before, the instructor will form them in single rank, and will send a man to the front, marching him by means of the bugle (if there is one) diagonally to the right and left, and occasionally at

Fig. 6.



the double, in order that the rest of the squad may not count his paces; then, at any convenient distance within 300 yards, he will command, "Halt," when the man will face the squad, and "stand at ease." He will then order the men to observe the soldier who is facing them, and to estimate the distance, recollecting the observations they have previously made on the men placed at measured distances.

The instructor will then question each man, and will note down his answers, calling him out of the ranks, and desiring him to speak in a low tone of voice, in order that those following him may not be influenced by his opinion. Every man will adjust the sight of his firelock to the distance he judges.

Then, in order to measure the correct distance, the instructor will place himself in the centre of the squad, and commanding "Quick march," they will advance toward the man; the men counting the number of paces, the instructor counting them aloud.

The men should be taught to measure the distance in the following manner: at every 120 paces they will double up one finger of the right hand to mark 100 yards, commencing again one, two, three, and so on. When, at the end of any division of 100 yards, the remaining distance appears to be within 100 yards, straightening their fingers, they will commence counting by *tens of yards*, by doubling up a finger every twelve paces; and finally, when at the end of a division of ten yards the remaining distance is less than ten yards, they may, by lengthening their pace, measure the remaining distance in yards. Two or three men should also follow, measuring the distance correctly with a cord or chain.

The instructor, in repeating this exercise, will take care that as much as possible it is conducted on different ground, and under different states of atmosphere, in order that the soldier may become habituated to the diversity of circumstances in which he may have to act.

The above course of instruction will be carried on by all the soldiers of the battalion yearly, before they proceed to the judging distance practice.

The men, after they have been drilled up to 300 yards, will continue the exercise up to 600 yards. In exercising the men at great distances it will be desirable to separate the squad into two equal parts, facing each other. After every man has judged the distance which separates them, they will advance towards one another, each party measuring half the distance. By this means much time and walking is saved.

The judging distance drill will be carried out in the following manner :

Four drills at fixed points to three hundred yards.

Three ditto at unknown distances, up to three hundred yards ;
each drill to consist of four answers.

Two drills at fixed points from three hundred to six hundred yards.

Three ditto at unknown distances, from three hundred to six hundred yards ; each drill to consist of four answers.

Manufacture of Cartridges.

The following articles for the Instruction of soldiers in the manufacture of cartridges, will be supplied to each barrack by the Ordnance Department.

Five tin measures containing two and a half drams.

Five tin funnels.

An iron straight edge, for cutting the paper.

A large knife.

Five cylindrical mandrels of hard wood, of the dimensions given in fig. 7, to roll the cartridge.

A former, to make the hollow in the inner case, to receive the point of the bullet, fig. 8.

A set of tin patterns for shaping the paper.

" Cartridge paper " and " white fine paper."

Bullets, and fine sand to be used instead of gunpowder.

To construct the cartridge, cut the paper according to the patterns, place the rectangle (fig. 9) on the little trapezium (fig. 10), the

sides A B C of the rectangle coinciding with the sides A B C of the trapezium, lay the mandrel on the rectangle, parallel to the side B C, the base of the mandrel even with the

Fig. 9.

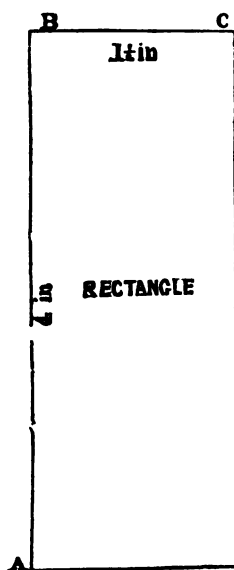


Fig. 10.

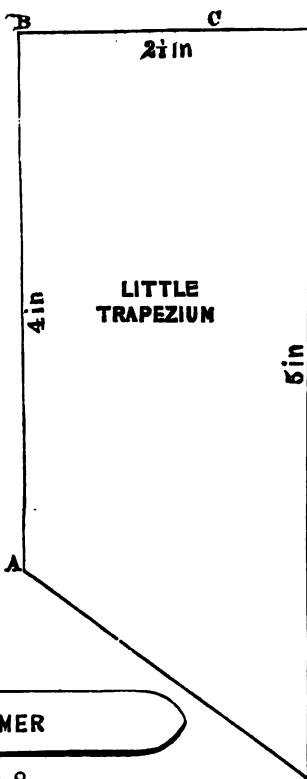


Fig. 7.

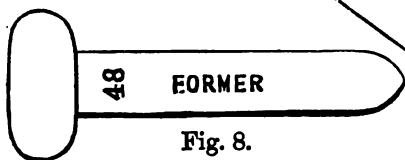
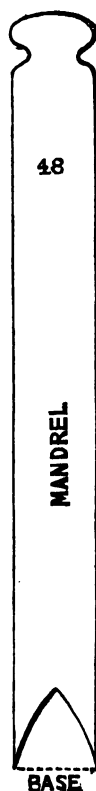


Fig. 8.

side CD of the rectangle; roll the whole tightly on the mandrel; place it vertically, and fold the remainder of the trapezium paper into the hollow in the base of the mandrel; commencing with the acute angle of the trapezium, make use of the point of the former to close the folds; examine the bottom of the inner case thus

Fig. 12.

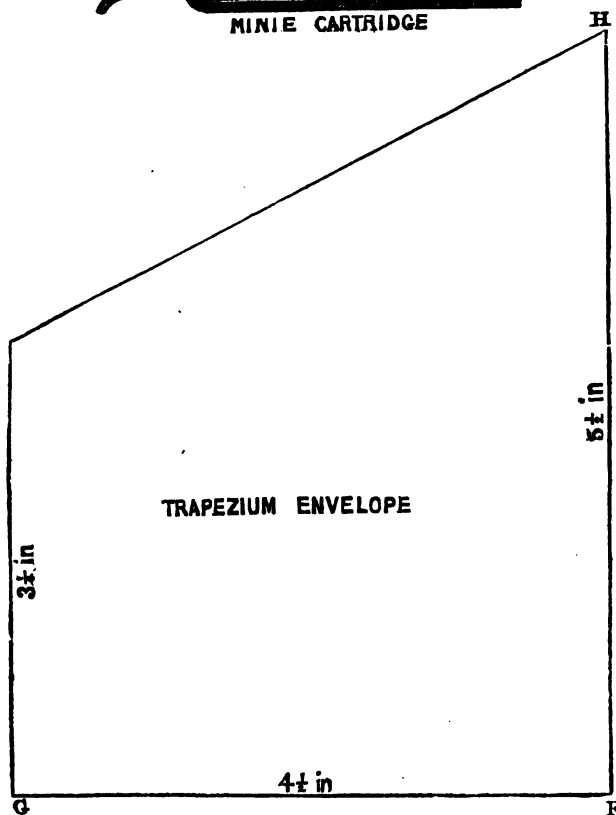


Fig. 11.

formed, to see that there remains no hole for the escape of the powder when charged; introduce the point of the bullet into the aperture at the base of the mandrel; take the trapezium

envelope (fig. 11), place the mandrel and bullet parallel to the side F G, the base of the bullet at half-an-inch from the base F H of the envelope; press up the point of the bullet into the cavity; roll the envelope tightly on the bullet and on the mandrel; fold the remainder of the envelope on the base of the bullet, commencing with the acute angle; place the base of the cartridge on the table; withdraw the mandrel, squeezing the case of the cartridge with the left hand, and raising up the mandrel with the right hand.

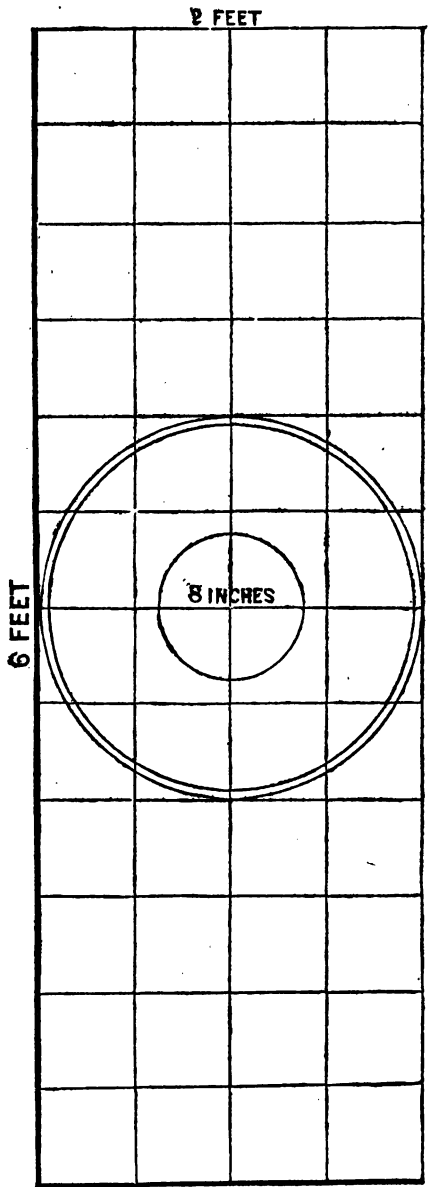
To charge the cartridge, introduce the point of the copper funnel into the bottom of the case of the cartridge; pour in $2\frac{1}{2}$ drams of fine grain powder from the powder flask; withdraw the funnel, taking care that none of the powder escapes between the case and the envelope; squeeze the top of the cartridge, and twist it round.

When completed, the base of the cartridge must be dipped up to the shoulder of the bullet in a pot of grease, consisting of six parts tallow to one of bee's wax.

Target Practice.

The targets will be of the same dimensions hitherto used, viz.: six feet in height by two in breadth. They will be constructed of cast iron, three quarters of an inch thick, and cut in squares of six inches on the face, to facilitate the marking off of the hits on the diagrams provided for the purpose; in the centre is a bull's eye, eight inches in diameter; and from the same centre, with a radius of one foot, a black circle is described, dividing the target into two parts, *centre* and *outer* (fig. 13). Circular rings will also be cut on the face of the target, to serve as guides in painting it. The white part of the target should be white-washed, and a pot of white-wash, together with a pot of black colouring for the bull's eye and black circle, should be kept

Fig. 13.



in rear of the target*. The shot will be found to make a very distinct mark, on striking the face of the target, so that the correct position of each shot is easily distinguishable at a short distance.

In all cases, when the nature of the ground admits of it, a trench should be dug for the markers, of the dimensions given in fig. 14, about fifteen yards to the front, and to one side of the targets, in such a position that the markers may easily see the face of the target from it; the earth excavated should be thrown up on the side of the firing; there should also be two epaulments, so as to screen the men, not only from the shots themselves, but from any stones that may be thrown up by them.

There will always be a fatigue party on the ground, under the orders of the officer instructor. These men will fix the target before the practice commences. They will lay down the cord for the practice of judging distance; and whilst the men are firing they will assist in marking, or in any other fatigue duty that may be required. Two men of the fatigue party will, when necessary, be placed as sentries to the right and left of the butt, and clear of the range, to prevent any persons from passing within the line of fire.

Each man will expend as his annual allowance of ammunition 90 rounds, in the following manner, viz.: 60 in firing individually, 10 in file firing and volleys, and 20 in firing in extended order.

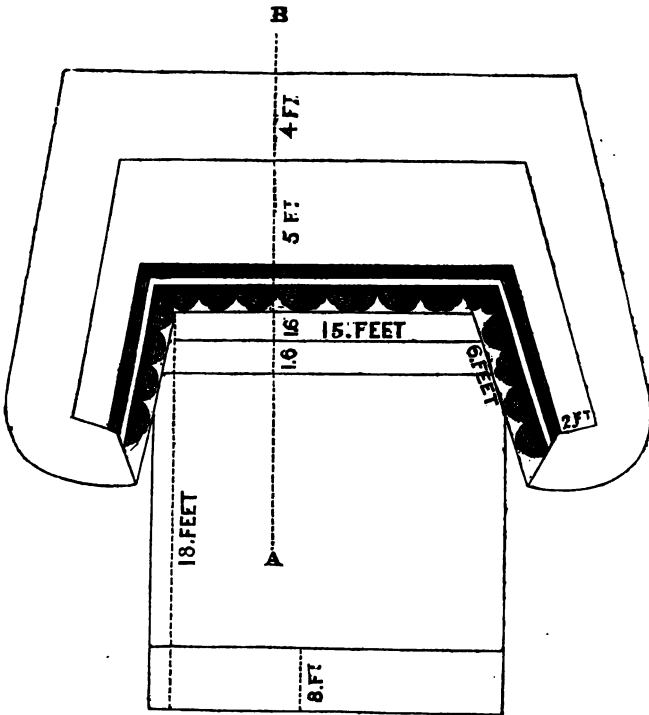
The targets will be arranged as follows for the different distances:—

Up to 200 yards (included) the practice will be at a single target:

At 250 and 300	at 2
„ 350 „ 400	„ 3
„ 450 „ 500	„ 4
„ 550 „ 600	„ 5
„ 650 „ 700	„ 6
„ 750 „ 800	„ 7
„ 850 „ 900	„ 8

* It has been found that the colouring which answers best is made by mixing whiting or lampblack, with water and size.

Fig. 14.



N.B.—This is the smallest description of Butt that ought ever to be made, and the markers must always sit on the upper banquette close to the interior slope.

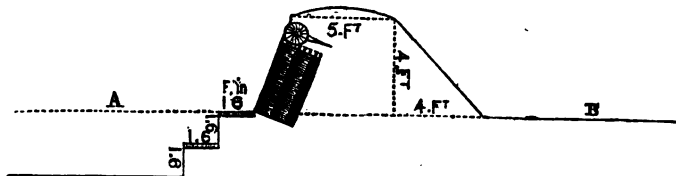


Fig. 15.

Section on the line A B.

The troops will fire at every distance of 50 yards, from 100 to 900. These distances are divided into three parts: up to 300 yards (included) will be for the practice of the 3rd class; as far as 600 yards (included) for the 2nd class; and the 1st class only will continue the practice to 900 yards.

Individual Firing.

The company or class will be marched to the ground in open column of sections right in front, and halted, so that the right of the leading section may rest on the point selected to commence the firing, the column facing the targets; the remaining sections will then open out to double distance from the front; they will pile arms and take off their knapsacks, placing them in a line, in rear of their arms. The non-commissioned officers and men, who have been previously told off as markers, will then be sent to the marker's butt, to mark, and give the established signals, which will be denoted by flags of different colours, to be raised above the butt, as the shot strikes.

The signals for the different distances, and the value attached to each shot, will be as follows:—

		Flags.	Value.
In the practice of the 3rd class.	outer	white	1
	centre	dark blue	2
	bull's eye	red and white stripe	3
	miss	. . . . .	0
Practice of the 1st and 2nd class.	outer	white	1
	centre	blue	2
	miss	. . . . .	0

The danger or cease firing signal will in all cases be a red flag. This will be hoisted whenever it is necessary to cease firing, in order to run out to wash the target, or for any other purpose; it will invariably be answered by the bugler at the firing point, by sounding the "Cease fire," and it is always to be kept up as long as the markers are out of the butt. Whenever the "Cease fire" is sounded from the firing point, it will be answered by raising the danger flag from the marker's butt; and in like manner, the "Commence firing" will be answered by

lowering it. Whenever a shot strikes the target to the right, the flag, denoting the value of the shot, will be inclined to the right of the marker's butt, and *vice versâ*; when the shot strikes high the flag will be raised as high as possible, and when low, it will only be raised high enough to be easily distinguishable above the butt.

It is to be understood that, in all practices, whenever a shot strikes the target, so that the circumference of the mark made by it cuts within the circumference of the bull's eye or centre, such shot is to be counted as hitting the bull's eye or centre; and the circumference of these divisions is in all cases to be taken to the *outer* edge of the mark cut on the face of the target.

The non-commissioned officer instructor of the class or company will keep a register of the form marked A. On this he will note, under the number of the shot fired, the *value* or *number of points* obtained by it, whether 1, 2, 3, or 0. At the conclusion of the practice he will add up the total number of points obtained by each man during the practice; the addition of the column of total points will give the total of the squad or section, and this divided by the number of men will give the *average* (should it be required). All entries are to be invariably made *in ink*, on the ground; and should any erasure be necessary, a fine line will be drawn through the figure thus, 21
027 the correction made, and the officer's initials immediately attached to it. The men's names should be written in the register before the party comes out, according to the order they stand in the ranks; and, in general, one register will suffice for each section.

The non-commissioned officer who is acting as marker in the butt, when convenient, will keep a diagram of the form marked G. On this he will mark each shot as it strikes. This diagram should always be kept by a non-commissioned officer of another company, who will be detailed for that purpose, and will serve as a check on the register kept by the non-commissioned officer instructor of the company firing. In the absence of diagrams, the marker should keep a register, on which the names have been previously written in the same order as on that kept by the non-commissioned officer instructor. This register cannot, how-

ever, be kept in the butt, when the firing is at long ranges, and the wind contrary, as the shots cannot then be heard by the marker. The markers should wear a white smock frock over their uniforms.

When the leading section has loaded by word of command, and everything ready to commence, the bugler, who is placed on the right of the firing point, will sound the "Commence firing;" and after the danger signal has been lowered, the officer will order the right-hand man of the front rank to go on; after he has fired he will immediately fall three paces to the rear; the next man of the front rank will move up to the firing point and fire, after which he will also fall three paces to the rear of the point he previously occupied. In like manner every man of the front rank will fire in succession; after which the rear rank will commence on the right, and after firing they will form in rear of the front rank, so that by the time the whole section has fired one round it will have re-formed three paces in rear of its original position. The non-commissioned officer of the section will then advance his section three paces, and load; after which the firing will proceed as before.

The non-commissioned officers of each section will fire at the head of their sections, according to seniority; the non-commissioned officer instructor should fire at the head of his company or class.

The instructor will take care not to correct a man at the moment he is firing, which would produce no other effect than to distract the man's attention from the object he is aiming at; but he will observe attentively, the position of each soldier, and correct him after he has fired.

Whenever the hits on the target become too numerous to distinguish quite easily the fresh ones as they strike, the target should be fresh white-washed; before which, however, the non-commissioned officer instructor must go up, and compare carefully his register with the diagram which has been kept in the butt, and with the target; the subsequent hits should then be marked on the diagram with a + or some other mark, to denote the shots which have struck the target after it was white-washed.

In the practice *as a company*, in the third class, the fourth section may be practised in judging distance whilst the first section is firing, and each section after it has fired may proceed to the judging distance practice. When, however, it is not found convenient to carry on the target and judging distance practices at the same time, the men who are not firing should always be occupied in the aiming and position drill.

All those men who are not occupied in the above-mentioned exercises, and who desire to watch the practice of their companies, are to stand on the right of the firing point; they are always to be kept clear of the section that is firing, and on no account is any noise or talking to be allowed between them.

At the conclusion of each practice the bugler will sound the assembly, when the non-commissioned officer instructor will go up to the target, and compare the diagram with the register; both diagram and register will then be signed by each of the non-commissioned officers, and countersigned by the officer instructor; the non-commissioned officer instructor will then fill up the duplicate column of "total points," which, after the officer instructor has attached his initials, will be cut off, and given to the non-commissioned officer instructor of the battalion, who, on the practice ground, is especially responsible that this order is rigidly attended to in all cases. When there are casualties who have to make up their practice on a subsequent day, the register will only receive the initials of the officer instructor and serjeants, and it will then be given over to the non-commissioned officer instructor of the battalion, who will take charge of it until it is required. When the whole company or class have completed their practice, the column of "casuals" will be totaled up; and the column of "casuals" added to the column "total points," will make the *duplicate* column "total points," which will then be torn off, and given to the non-commissioned officer instructor of the battalion as before; the register will then be signed in full.

It is desirable that every company should be made as effective as possible whenever it goes to target practice; but should any men be unable to attend with their companies, all such casualties will make up their lost ground in one practice the next day their

company goes out, when the register of the section, or class, at the distance missed, will be taken out again, and their total practice recorded under the column of "casuals;" the diagram should also be taken out, and the hits marked with some sign to distinguish them from the shots previously obtained by their company or class; both the column of "casuals" and the diagram will then receive the initials of the officer instructor.

The practice of individual firing is divided into three "periods," in each of which the soldier will fire twenty rounds.

FIRST PERIOD.

Practice of the Company in the 3rd Class.

The battalion will commence the first period yearly, with the practice of the 3rd class, which will be carried on by companies, under the command of their captains, assisted by the officer instructor. All shots which hit the bull's-eye will be marked with No. 3 in the register; those that strike the centre, with No. 2; those that strike the outer, with No. 1, and the misses with 0. Each man will fire four rounds at each of the following distances:—100, 150, 200, 250, and 300 yards. As far as 200 yards (included), the practice will be conducted with fixed bayonets and knapsacks. In the last two distances the men will fire with knapsacks and unfixed bayonets, and they will be allowed to stand or kneel at pleasure.

When the whole of the company has executed the practice up to 300 yards in the 3rd class, the "first period" of the practice return, marked B, will be filled up by the non-commissioned officer instructor of the company, and the totals of each distance will be added together, to shew the practice of each man in the third class. From this column the company will be divided into two classes; those non-commissioned officers and privates who have gained in the whole practice a total number of points equal to two-thirds the number of shots fired will pass into the second class; the remainder will re-commence the practice of the third class at 100 yards. Whenever the division of the number of

shots into these parts produce a fraction, the fraction will be omitted in favour of the men. For example, 13 will be taken as two-thirds of 20. This "period" of the return will be signed by the captain of the company, and by the officer instructor, after having been carefully examined and compared with the registers by the non-commissioned officer instructor of the company.

The names of the men who have passed into the 2nd class will be read to the companies on parade.

SECOND PERIOD.

Practice of the Second and Third Class.

After the men of the company have been divided into classes, the practice will no longer continue as a company, but will be carried on by classes, under the superintendence of the officer instructor of the battalion. Each class, if the number will admit of it, will be divided into sections, and their names will be placed in the registers, in the order they stand in the practice return. The company instructor will attend when possible, with every class. Whenever there is a choice of time for practice, the senior class will always have the advantage.

The 3rd class will repeat the practice from 100 to 300 yards, firing four rounds per man, at each distance, as before.

The 2nd class will fire three rounds per man, at the distances of 350, 400, 450, 500, and 550 yards. At the distance of 600 yards each man will fire five rounds to complete the 20 rounds allotted to each period. In the practice of the 2nd class, all those shots which strike the centre will be marked No. 2 in the register; those which strike the outer, with No. 1; remainder, 0. The bull's-eye in this practice will only count as centre.

At the longer ranges of the 2nd class it will be found desirable to paint the whole of the centre black.

The practice of the 2nd class will be carried on throughout with knapsacks and unfixed bayonets, the men standing or kneeling at pleasure.

At the conclusion of the practice of the "second period" the

non-commissioned officer instructor of the company will fill up the column of the "second period" in the practice return for second and third class, and having totaled the number of points obtained at each practice, he will then take the return to the captain of the company, who will attach his signature to each column; after which it will be delivered over to the non-commissioned officer instructor of the battalion, who will take the same to the officer instructor for signature, and then return it to the company.

A second classification will now be made, when all those men who, in the practice of the second class, have obtained a number of points equal to half the number of shots fired, will pass into the first class; the remainder will repeat the practice of the second class.

The qualification for passing from the 3rd to 2nd class will be the same as in the first period.

THIRD PERIOD.

Practice of the First, Second, and Third Class.

The three classes will be told off, as before; the second class will now be composed partly of men who repeat the practice of the second class, and partly of men who have passed out of the third class. The practice will be conducted on the same principles, and the hits will have the same value as in the second period, except that the centre in the practice of the first class will have a diameter of four feet instead of two feet.

The first class will fire three rounds per man, at the distances of 650, 700, 750, 800, and 850 yards; and at 900 yards each man will fire five rounds. After the columns of the "third period" have been filled up and totaled, a third classification will be made; after which, a list will be made out in each company, by the non-commissioned officer instructor of the company, and posted in the barrack room. In this list, each man will be placed in his class, according to his performance; and the number of points obtained in the third period of practice will be attached to his name.

The men of the first class will be exempt throughout the following year from target drill.

That man who obtains the greatest number of points in the practice of the first class will receive the prize as best shot of his battalion. Should two or more men obtain the same number of points in the practice of the first class, the prize will be awarded to that man who has obtained the greatest number of points throughout the whole practice of individual firing.

File and Volley Firing.

This practice will be carried on as a company, under the command of the captain, the men of all classes being united. The company will fire by sections two deep, at the distance of 300 yards, with knapsacks and fixed bayonets. Each company will expend five rounds per man in file firing and five in volleys. At the conclusion of the practice of the company, the non-commissioned officer instructor, together with the non-commissioned officer instructor of the battalion, and a serjeant of another company, will go up to the targets, and mark the hits on a diagram, which will be signed, as in the preceding practices, by the two serjeants and by the officer instructor of the battalion, the same as practice of company in third class. The diagram will then be immediately given over to the non-commissioned officer instructor of the battalion. The non-commissioned officer instructor of the company will keep a memorandum of the total points obtained in this practice, and insert them in the proper place in the practice return. This column will bear the signature of the captain and officer instructor of the battalion.

For this practice the mark will consist of eight targets placed close together, and each target will have a separate bull's-eye and centre.

All shots which hit in the bull's-eye will count 3; centres 2; outers 1; misses 0.

Skirmishing.

This practice will also be carried on as a company, under the command of its captain. Twenty rounds per man will be fired by sections in extended order, in two practices. In the first practice, five rounds will be fired kneeling at the distance of 300 yards, and five in advancing to 100 yards. In the second practice, ten rounds will be fired, advancing and retiring, between 200 and 400 yards, judging their distance from the targets, and arranging their sights accordingly. The instructor will take care that the men of the third class (who have not fired at this latter distance) should arrange their sights to the proper elevation. In firing advancing, the men will be allowed to kneel as they fire, rising to load.

The files will always be extended to six paces. Eight targets will be placed with intervals of six paces between each. Each target will have its bull's-eye and centre, and the hits will count as in the practice of the first and second class.

The sentries placed on each flank of the butt to keep the ground will prevent any persons from approaching within fifty yards of either flank of the line of targets.

At the conclusion of the practice of each section a diagram will be marked off, and signed, as in the preceding practices, which will be immediately given to the non-commissioned officer instructor of the battalion; the non-commissioned officer instructor of the company will make a memorandum of the points obtained by each section in the practice, the totals of which will be inserted in the proper place of the practice return, and bear the signature of the captain and officer instructor.*

WHEN the number of rounds available for the yearly course of target practice is not sufficient to carry on the practice as detailed in the above, the following alterations will be observed in the order of firing.

* The average points obtained in this practice added to the average obtained in "practice of company in third class," and that of "file firing and volleys," will denote the merit of the company.

1st. When only 70 rounds per man are available, the practice will be conducted as detailed in these instructions, except that the practice of the third period will be omitted. Should there be any number of rounds over, they will be used in the instruction of the men of the third class by firing from a rest, at distances from 300 to 600 yards.

2nd. When 60 rounds, the practice of the third period will be omitted, and 10 rounds only will be expended in the second period; viz., in the third class, five at 200 and five at 300 yards; and in the second class, five at 400 and five at 600 yards.

Whenever the practice ground does not afford a longer range than 600 yards, and the regulation allowance of 90 rounds per man is available, the men of the first class will expend the 20 rounds allotted to the practice of the first class in skirmishing, advancing and retiring between 600 and 400 yards. This practice will be registered, but will not be included in any return.

When the range only extends to 400 or 500 yards, all those men who pass into the second class during the first period will expend the amount of ammunition allotted to the second period, at distances between 300 yards and the extreme limits of the range; taking care that the ammunition is equally divided between those distances. The practice of the third period will be omitted, and the battalion will not expend more than 70 rounds per man in the annual course of practice.

When the range extends to 300 yards only, all those men who pass into the second class during the first period will repeat the practice of the third class during the second period. It must be understood, however, that when a man has once passed into the second class, he cannot be reduced during the annual course of practice, even although he may fail in going over the same distances a second time. At the close of the second period no further classification can be made in the case of those who have already passed into the second class, by the practice of the first period; but a reorganization of the classes will take place, when every man will be placed individually according to his performances in the second period. The skirmishing in this case can only be carried on between 300 and 200 yards. The bat-

talion will only expend 70 rounds during its annual course of practice.

So long as 60 rounds per man are available, and the range extends to 300 yards, the following practices will in all cases be gone through, without the slightest alteration either of the amount of ammunition or distance, viz., "*The Practice of the Company in the Third Class*," "*File firing and Volleys*," and "*Skirmishing*" Practice; but should a still further reduction be unavoidable, the skirmishing practice may be reduced to ten rounds, or if necessary, discontinued altogether; the whole of the course of practice must, in this case, be conducted as much as possible in conformity to the instructions contained in this book, according to the discretion of the commanding officer and instructor.

Whenever a single company is detached from its head quarters, and means of practice are provided, the company will exercise in conformity to the instructions herein contained, and at the conclusion of the practice a company return of the established form will be sent in to head quarters. An assistant non-commissioned officer instructor should be temporarily appointed, in addition to the company instructor.

Whenever two or more companies are detached, the assistant officer instructor should join the detachment during the period of target practice; provided always, that both regiment and detachment are in the United Kingdom of Great Britain or Ireland, or in any part of Her Majesty's dominions, where this may be practicable.

When practicable, it will be desirable that a company should be kept off duty, for not more than one week at a time, to enable it to proceed with its practice without interruption; but should the severity of the duty be such as to prevent this arrangement, the same class of the different companies will parade at the same time, accompanied by a non-commissioned officer of the company (if possible, the non-commissioned officer instructor), each company keeping its own register of practice, and causing them to be signed as before laid down.

Should any men be absent when a company or class is firing

at any distance the whole of the muskets of that distance must parade as to complete the practice of the distance missed, at the same time; and, if possible, they should do so when the company or company next goes out to practice. But should this be impossible they must parade on a subsequent day, and a second column of "casuals" must be ruled in the roster. Any men who may have twice missed parading with the muskets of a given distance cannot be further exercised in the practice of that period.

Judging Distance Practice.

The following course of judging distance practice will be gone through yearly by every man of the battalion, and, when possible, it will be carried on by the sections that are not occupied in firing at target practice.

One or more men, or an ordinary target, will be stationed in any convenient position on the practice ground; a light chain or cord 200 yards in length will be stretched in any direction that may be found convenient for the practice, taking care, however, to vary the ground as much as possible for the different practices.

The cord, or chain, will be divided into parts of five yards each, and the distance of each division from the target will be numbered on small bits of parchment attached to the cord at the divisions; the figures on the bits of parchment attached to the cord should not be large enough to be distinguished except on close inspection.

The commander will fix on a point at any uncertain distance to commence the practice, and he will fall the section in, about ten paces to the left of this station, facing the object; he will then call each man in succession to the point selected, and the man will then judge the distance in yards, and his answer will be noted down in a register of the form marked D, after which he will pass on about ten paces to the right of the cord.

As the commander will always select a division of five yards

for the practice, the men should be cautioned to complete a division of five yards in giving their answers.

After all the answers of the section have been noted down, the commander will refer to the cord, and state the correct distances aloud to the men, as well as the number of points obtained by each individual: he will also note the correct distance at the top of the column.

When the men are tolerably advanced in this practice, it will be found advisable to read the answers only to the men at each station, reserving the correct distance for the conclusion of the practice, in order to preclude the possibility of any clue being obtained by noting the distance from the stations at which they may have been previously examined.

After the section has been exercised at one station they may proceed to another, taking care, however, to march them by a circuitous route, obliquing to the right or left, in order that the men may not be unable to pace the distance from the preceding station.

The commander of the practice will take care that the strictest silence is preserved throughout the practice, and that the men should not consult together in judging the distance. The men in giving their answers must speak in a low tone of voice, that they may not be overheard by the rest.

The practice of judging distance, like the target practice, will be divided into three periods, and three classes. The 3rd class will practise as far as 300 yards, the 2nd to 600 yards, and the 1st as far as 900 yards.

FIRST PERIOD.

Practice of the Company in the 3rd Class.

This practice may be carried on in general by the sections that are not occupied in firing when at target practice; the register will *invariably* be kept by a non-commissioned officer of another company, and if possible, by a non-commissioned officer instructor; at the conclusion of the practice, it will be signed by the non-commissioned officer who keeps the register, and by a non-

commissioned officer of the company, and countersigned by the officer instructor. When there are casualties, the initials only will be attached, instead of the signatures, and the register will be given in to the non-commissioned officer instructor of the battalion at the conclusion of the practice. When the casualties are to make up their judging distance, the non-commissioned officer instructor of the company will go to the non-commissioned officer instructor of the battalion for it, and after the whole of the register has been filled up, the signatures will be attached in full; the register will then be kept until the company instructor has filled up the column of the "1st Period" in the judging distance practice return, after which they will be given in to the non-commissioned officer instructor of the battalion. The columns of this period will be signed by the captain of the company and by the officer instructor, who will previously compare it carefully with the registers.

In the practice of the company in the third class every man will be exercised at 16 different stations, and in general it will spread over a period of four days. All those who answer the correct distance will be noted in the column of points with No. 3; those who answer within five yards inclusive, with No. 2; within ten yards, with No. 1; remainder 0.

All those men who obtain in the whole practice a total number of points equal to the number of answers given will pass into the second class, the remainder will recommence the practice of the third class.

SECOND PERIOD.

Practice of the 2nd and 3rd Class.

The whole company will now be told off in two classes and into sections, and the practices continued in that order; another cord will be stretched in continuation of the first, as far as 600 yards, for the practice of the second class. Every man who judges within five yards inclusive will be registered with No. 3; those who judge within 10 yards, with No. 2; those who judge within 15 yards, with No. 1; and the remainder with 0. At the conclusion of

the second period, the columns of the second period in the judging distance practice return will be filled up, and signed by the captain and officer instructor as before. All those who in the practice of the second class have obtained a total number of points equal to the number of answers given will pass into the first class, the remainder will repeat the practice of the second class. Every man will be exercised at 16 different distances in the practice of the second period. The test for passing from the third to the second class will be the same as in the practice of the company in the third class.

THIRD PERIOD.

Practice of the 1st, 2nd, and 3rd Class.

The three classes will be told off as before. The second class will now be composed partly of men who repeat the practice of the second class, and partly of men who have passed out of the third class. The answers of the men of the first class will be registered as follows: viz., within 10 yards, with No. 3; within 15 yards, with No. 2; within 20 yards, with No. 1; remainder 0. That man who, in the practice of the first class, obtains the greatest number of points, will obtain the battalion prize as best judge of distance. Should one or more men obtain the same number of points, the prize will be awarded to that man who has obtained the greatest number of points throughout the whole practice.

Every man will be exercised at 16 different stations in the practice of the third period. At the conclusion of the third period, the columns of this period will be filled up and signed, and the registers given in to the non-commissioned officer instructor of the battalion as before.

(NOTE.) It is to be observed that should the 2nd or 1st Class be brought to judge within the distance of an inferior Class, the points shall then only be counted agreeably to the conditions laid down for those classes.

Instruction of Recruits.

Every recruit, before he is allowed to join the practice of the battalion will be put through the whole of the foregoing course,

with the exception of the judging distance practice, under the close superintendence of the officer instructor and non-commissioned officer instructor of the battalion.

In the aiming drill, the instructor should at first cause the recruit to aim at a small mark placed on the wall of the yard or barrack room. In this preliminary exercise, the instructor should confine the attention of the recruits to the following simple rules:—

1. That the firelock should not incline to the right or left.
2. That the line of sight should be taken along the centre of the notch of the back sight, and the summit of the fore sight should cover the middle of the mark.
3. That the recruit should fix his eye stedfastly on the mark aimed at, and not on the fore sight, which latter will be easily brought into the alignment if the eye is fixed stedfastly on the mark.

The instructor should give particular attention to this last rule, for the beginner is very apt to fix his eye on the fore sight instead of the mark, in which case the latter can never be distinctly seen, and the difficulty of aiming is greatly increased.

The recruit should never be allowed to aim with his left eye open; it is certain, that every man may be brought to accomplish this by practice.

In the position drill, the instructor should frequently place himself in front of the men, at five or six paces distant, and causing any man to aim at his right eye, he will be able to ascertain that he obtains the alignment quickly and correctly, and that it is not distracted by pulling the trigger.

The squad in these preliminary drills should never consist of more than five or six men at a time.

Snapping Caps, and firing Blank Cartridge.

Having distributed three or four caps to each man, the instructor will place a lighted candle on a table or stand, at eight or ten paces in front of the squad; he will then make each man

advance in succession to such a distance from the light that when aiming, the muzzle may be about a yard from it; after going through the motions of firing, and loading in the usual manner, putting on the cap, the man will fire aiming at the wick of the candle, when, if the aim is properly directed, the candle will be blown out.

In order to accustom the recruit in some measure to the explosion of the gunpowder and recoil of the piece, the squad should then be made to fire a few rounds of blank cartridge, in file firing and volleys, before it commences the practice with ball cartridge.

After all these exercises have been gone through, the soldier will be competent to join the practice of his battalion; but any man who concludes his practice as a recruit after the target practice of his battalion has commenced, will not fire with his battalion until the ensuing year.

A return will be made out by the non-commissioned officer instructor of the battalion, on the form of a company return, shewing the practice of the recruits yearly; also an index will be kept of the preliminary drills.

Prizes.

Prizes will be awarded at the conclusion of the whole practice, subject to such arrangements as may be hereafter approved by His Lordship Commanding in Chief.

Returns, &c.

The following forms will be made use of in the different branches of the instruction.

1 *An Index for the Preliminary Instruction.*

This index is to be filled in by the company's instructor after each drill or parade.

2 *A Register of Practice for Individual Firing.* [A.]

This register is invariably to be kept in ink on the practice ground, and any erasure that may be necessary will be marked through with a fine line, and corrected; the correction will invariably receive the initials of an officer. This register has a duplicate column of "total points," which must be torn off at the conclusion of each practice, and given in to the non-commissioned officer instructor of the battalion, who will write on the back the number of the section, company, or class, as also the period, distance, and date. At the conclusion of each practice, the register will be signed by the company instructor, or serjeant doing the duty of company instructor, and by the serjeant who has been marking at the butt, and countersigned by the officer instructor. When there are casualties, the register will only receive the initials of these serjeants, and the column of "total points" will not be torn off till the register is completed, when it will receive the signatures in full.

3 *A Company Return.* [B.]

To be filled up by the company instructor as the practice proceeds.

Each period when completed will be signed by the captain and by the officer instructor, after having been carefully compared with the registers and with the checks kept by the non-commissioned officer instructor of the battalion.

4 *A Battalion Return.* [C.]

To be filled in by the officer instructor as the practice proceeds. At the bottom will be noted the number of rounds per man drawn from the Ordnance Department, as also the number of rounds expended by each man who has completed the annual course of practice. These figures are merely intended to shew

that the proper course has been gone through, according to the extent of range ; they are not intended as a check on the expenditure of ammunition. This return will be signed by the officer commanding the battalion, and by the officer instructor.

5 *A Register of Judging Distance Practice.* [D.]

To be kept on the ground by a serjeant of another company, to be signed by him and also by a non-commissioned officer of the company that is practising. In all other points, this register will be kept on the same principles as the system of target practice.

6 *A Company Return of Judging Distance Practice.* [E.]

To be filled in as the practice proceeds, and signed like the company return for target practice.

7 *Diagrams, for File-firing and Volleys, and Skirmishing Practice.* [F. & G.]

This diagram will be marked off at the conclusion of each practice, signed by the two serjeants, and countersigned as before. Diagrams of the same description may also be made use of in the practices of firing individually ; in which case, they should be kept in the marker's butt, and each shot noted as it strikes ; they will then serve as a check to the registers.

By Command,

G. A. WETHERAIL,

D. A. G.

RECAPITULATION of the NUMBER of DRILLS or PRACTICES to be occupied in the INSTRUCTION OF MUSKETRY by every Non-commissioned Officer and Soldier of the Battalion annually, and by the Recruits before they join in the Practice of the Battalion.

PRELIMINARY DRILLS.	N.C. Officers and Soldiers.		Recruits.		REMARKS.
	No. of Drills or Practices.	No. of Rounds.	No. of Drills or Practices.	No. of Rounds.	
Theoretical Principles	6	...	According to the discretion of the Officer Instructor.	...	By the Officer Instructor every two months.
Cleaning Arms	6	...		...	By the N.C. Officer Instructor every two months.
Aiming Drill	6	...		...	By the Officer Instructor.
Position Drill	6	...		...	By the Officer Instructor.
			No. of Percussion Caps.	Blank Cartridge	
Snapping Caps and Blank Cartridge . . . . .	...	...	20	20	By the Officer Instructor.
Judging Distance Drill	12	...	...	...	By the Officer Instructor.
			According to the discretion of Officer Instructor.		
PRACTICES.				Ball Cartridge	
Firing and Preliminary Practice from a Rest . . . . .	...	...	5	20	By the Officer Instructor.
Individual Firing. { 1st Period	5	20	5	20	In the Company under the Captain of Companies and Recruits by the Officer Instructor.
{ 2d Period { 2d Class	6	20	6	20	By the Officer Instructor.
{ 3d Class	5		5		
{ 1st and 2d Class	6	20	6	20	By the Officer Instructor.
{ 3d Class	5		5		
File Firing and Volleys	1	10	1	10	In the Companies by their Captains, and Recruits by the Officer Instructor.
Skirmishing Practice	2	20	2	20	Do. do.
Judging Distance Practice. { 1st Period	4	...	...	...	By the Officer Instructor.
{ 2d Period	4	...	...	...	By the Officer Instructor.
{ 3d Period	4	...	...	...	By the Officer Instructor.
Total . . . . .	...	90	...	110	

OBS.—*The following Forms have in some cases been reduced
in size for the convenience of printing.*

[A.]

**REGISTER OF PRACTICE of the 1st Section, 2nd Company,
in the 3rd Class.**

Targets, 2. Distance, 300 Yards. Date, August 16th, 1853.

Rank and Names.		Points obtained in Firing.								Total Points.	Carnals.	Remarks.	Total Points.
		1	2	3	4	5	6	7	8				
1	Serjeant Nobes .	1	1	0	3					5			5
2	Corporal Hills .	3	0	1	1					5			5
3	Private Andrews	0	1	0	3					4			4
4	„ Burrage .	0	0	3	1					.	4		4
5	„ Gardner .	0	3	2	1					6			6
6	„ Pullen .	0	0	1	2					.	3		3
7	„ Mitchell .	1	0	2	2					5			5
8	„ Talbot .	1	1	1	0					3			3
9	„ Palmer .	3	2	0	1					6			6
10	„ Barker .	0	0	0	3					3			3
11	„ Smith .	1	1	0	1					3			3
12	„ Bates .	0	1	2	1					5			5
13	„ Cross .	3	0	1	2					.	6		6
14	„ Rutter .	1	0	0	3					4			4
15	„ Tyler .	0	0	2	2					4			4
16	„ Cherry .	1	2	0	1					4			4
17	„ Crabb .	3	3	1	0					7			7
18	„ Burgess .	1	0	1	3					5			5
19	„ Martin .	0	1	0	0					1			1
20	„ Poynter .	3	1		1					5			5
21													
22													
23													
24													
25													
26													
27													
	Total .									75	13		88
	Total divided by the number of Men.									4.40			4.40

Company Instructor.

Marker.

Officer Instructor.

10

18

Skirmishing.		REMARKS.
Practices.		
1	2	
Rounds.		
10	10	
Distance.		<p>Discharged Hospital.</p> <p style="text-align: center;">* * *</p>
100 to 400 yards.		
Men present.		
1	1	
1	1	
1	1	
1	1	
1	1	
1	1	
1	1	
1	1	<p style="text-align: center;">* * *</p>
1	1	
264103	103	
Instructor.		<p>_____</p> <p style="text-align: right;">Captain.</p> <p>_____</p> <p style="text-align: right;">Officer Instructor.</p>

[C.]

Battalion Return.

TARGET PRACTICE.

Return of the

Battalion

Regiment.

Date

Companies.	Practice by Companies.										Practice by Classes.										REMARKS.											
	Practice of Company in 3rd Class.					File Firing and Volleys.					Skirmishing.					2nd Period.						3rd Period.										
	Men.		Points.		Rounds.	Men.		Points.		Rounds.	Men.		Points.		Rounds.	Men.		Points.		Rounds.		Men.		Points.		Rounds.	Men.		Points.		Rounds.	
	1st Practice.	2nd Practice.	1st Practice.	2nd Practice.		1st Practice.	2nd Practice.	1st Practice.	2nd Practice.		1st Practice.	2nd Practice.	1st Practice.	2nd Practice.		1st Practice.	2nd Practice.	1st Practice.	2nd Practice.			1st Practice.	2nd Practice.	1st Practice.	2nd Practice.		1st Practice.	2nd Practice.	1st Practice.	2nd Practice.		1st Practice.
No. 1	104	20	1435	103	10	737	103	10	454	103	10	320	44	20	551	60	20	482	21	20	494	70	20	494	7	20	27	81	11	104	On Detachment.	
No. 2	98	20	1049	96	10	673	94	10	376	94	10	282	50	20	430	48	20	394	30	20	404	63	20	448	7	20	27	64	8	100	On Detachment.	
No. 3	98	20	1143	96	10	733	96	10	386	96	10	324	40	10	289	58	10	367	30	20	494	70	20	494	7	20	27	74	10	100	On Detachment.	
No. 4*	98	20	1143	96	10	733	96	10	386	96	10	324	40	10	289	58	10	367	30	20	494	70	20	494	7	20	27	74	10	100	On Detachment.	
No. 5*	98	20	1143	96	10	733	96	10	386	96	10	324	40	10	289	58	10	367	30	20	494	70	20	494	7	20	27	74	10	100	On Detachment.	
No. 6*	98	20	1143	96	10	733	96	10	386	96	10	324	40	10	289	58	10	367	30	20	494	70	20	494	7	20	27	74	10	100	On Detachment.	
No. 7*	98	20	1143	96	10	733	96	10	386	96	10	324	40	10	289	58	10	367	30	20	494	70	20	494	7	20	27	74	10	100	On Detachment.	
No. 8*	98	20	1143	96	10	733	96	10	386	96	10	324	40	10	289	58	10	367	30	20	494	70	20	494	7	20	27	74	10	100	On Detachment.	
No. 9*	98	20	1143	96	10	733	96	10	386	96	10	324	40	10	289	58	10	367	30	20	494	70	20	494	7	20	27	74	10	100	On Detachment.	
No. 10	103	20	1409	102	10	757	103	10	541	103	10	437	42	20	412	57	20	483	30	20	284	63	20	448	7	20	27	66	14	107	On Detachment.	
TOTAL	403	20	5036	396	10	2905	396	10	1757	396	10	1363	176	20	1682	223	20	1722	51	20	758	133	20	942	14	40	54	79	285	43	411	On Detachment.
Total div- ided by No. of Men.	40	2	1246	39	1	733	39	1	443	39	1	344	17	2	955	22	2	772	11	2	1496	13	2	708	1	4	3	19	7	107	On Detachment.	
Company in 3rd Class. Points divided by Men										No. of Rounds per Man, drawn from the										No. of Rounds fired per Man to complete the annual course of Practice.										Yards.		
File Firing and Volleys. Points divided by Men										Ordinance Department for the annual course of Practice.										90										900		
Skirmishing Practice. Points divided by Men										1st										2nd										900		
Total Battalion										12-48										7-33										900		

Lieutenant-Colonel

Officer Instructor

Inspecting Officer

† This figure denotes the merit of the Battalion.

* These Companies detached at Stations where a range of 300 yards could not be had.

RANK AND NAMES.		Correct Dist. 520.		Correct Dist. 385.		Correct Dist. 460.		Correct Dist. 535.		Correct Dist.		Correct Dist.		Total.		Total Points.
		Ans.	Points.	Ans.	Points.	Ans.	Points.	Ans.	Points.	Ans.	Points.	Ans.	Points.	No. of Answers.	No. of Points.	
1	Private Wilcock	340	0	355	0	460	3	510	0					4	4	3
2	" Bates	340	0	335	0	445	1	510	0					4	1	1
3	" Aldridge	310	2	395	3	460	3	550	1					4	9	9
4	" Godmark	310	2	390	3	455	0	505	0					4	8	8
5	" Harriman	310	2	395	3	480	3	540	3					4	11	11
6	" Pointer	320	3	410	1	480	0	510	0					4	4	4
7	" Martin	325	3	400	3	435	0	525	2					4	8	8
8	" Beer	305	1	425	0	450	2	520	1					4	4	4
9	" Burrage	395	0	425	0	445	1	510	0					4	4	4
10	" Hills	325	3	405	2	450	2	550	1					4	1	1
11	" Lemnox	385	0	430	0	470	2	520	1					4	8	8
12	" Crabbs	350	0	415	0	450	2	515	0					4	3	3
13	" Cherry	305	1	410	1	445	1	510	0					4	2	2
14	" Hale	335	1	390	3	440	0	505	0					4	3	3
15	" Plum	300	0	400	3	445	1	505	0					4	4	4
16	" Snape	320	3	365	0	420	0	530	3					4	4	4
17	" Owens	310	2	365	0	415	0	510	0					4	6	6
18	" Liloyd	320	3	395	3	410	0	525	2					4	2	2
19	" Stevens	325	3	405	2	450	2	553	1					4	8	8
20	" Cross	375	1	480	0	590	0	630	0					4	1	1
21																
22																
23																
24																
25																
26																
27																
Total																98
Total divided by the number of men . . . }																4.90

Marker. _____ Serjeant of Company. _____ Officer.

Section Company Battalion Regiment

1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	5	6
6																									
5																									
4																									
3																									
2																									
1																									
6																									
5																									
4																									
3																									
2																									
1																									
6																									
5																									
4																									
3																									
2																									
1																									

Total Number of points . 128
 Order of Firing File and Volley.

Total points divided by } 6-15
 number of Men . . }

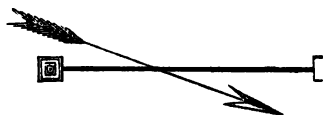
Best Shots.

Wind strong.

Atmosphere cloudy.

Bull's Eyes . .	6
Centres . . .	25
Outers . . .	55
Lowens . . .	36
Uppers . . .	50
Right . . .	42
Left . . .	44
Hits . . .	86
Misses . . .	114
Rounds . . .	200

General Remarks.



Marker

Company Instructor

Officer Instructor

[G.]

Register of the Practice.

185 .

2nd Practice Section Company Battalion Regiment

1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	6
5																				5
4																				4
3																				3
2																				2
1																				1
2																				2
3																				3
4																				4
5																				5
6	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Distance . . . 200 to 400 yards.

Order of firing . Skirmishing, advancing, Wind strong.
and retiring.

Total Number of points . . 153

Total points divided by } 7.65
number of Men }

Men 20.

Atmosphere clear.

Rounds . each 10.

Best Shots.

Bull's Eyes . 10.

Centres . . . 33.

Outers . . . 67.

Lowes . . .

Uppers . . .

Right . . .

Left . . .

Hits . . . 110.

Misses . . . 90.

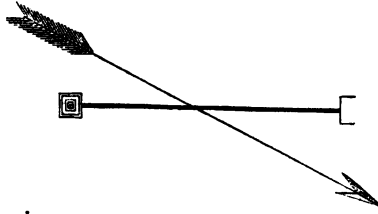
Rounds . . . 200.

General Remarks.

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